### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Steven William Doane and Group Art Unit: William McKee Doane Application No. Filed: For: AN ACID-BASE METHOD OF FORMING A SUPERABSORBENT POLYMER PRODUCT FOR USE IN AGRICULTURE Date: January 21, 2004 INFORMATION DISCLOSURE STATEMENT TO THE COMMISSIONER FOR PATENTS: Pursuant to their duty of disclosure, applicants present for the Examiner's consideration 1. the documents listed on the accompanying Form PTO-1449. Copies of the documents are enclosed. [1] Copies of the document are not enclosed because (1) they are already of record in U.S. Pat. Application No. 10/265,500, filed October 7, 2002, on which this application relies for an earlier filing date under 35 U.S.C. § 120, and (2) any information disclosure statement filed in the prosecution of U.S. Patent Application No. 10/265,500 complies with 37 C.F.R. §§ 1.98(a) and (c). (37 C.F.R. § 1.98(d).) Applicant(s) draw(s) the Examiner's attention to the enclosed copy of copending 2. [ ] U.S. Pat. Application No. \_\_\_\_\_\_, filed \_\_\_\_\_, for \_\_\_\_\_, which is cited in this application. This information disclosure statement is being submitted: 3. Within three months of the filing date of a national application other than a continued prosecution application under 37 CFR 1.53(d); within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; before the mailing of a first Office action on the merits; or before the mailing of a first Office action after the filing of a request for continued examination under 37 CFR 1.114. (No statement under 37 CFR 1.97(e) is required.) After the period set forth in paragraph 1a, but before the mailing date of b. either a final action, a notice of allowance, or an action that otherwise closes prosecution in the application. (Check box i. or ii.) A \$180.00 information disclosure statement submission fee set i. [ ]

forth in 37 CFR 1.17(p) is enclosed.

After the mailing date of a final action or notice of allowance and on or [ ] c. before payment of an issue fee. A statement specified by 37 CFR 1.97(e) is set forth below. Enclosed is a \$180.00 information disclosure statement processing fee set forth in 37 CFR 1.17(p). The attorney or agent signing below hereby states that: 4. [ ] each item of information contained in the information disclosure statement [ ] was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or no item of information contained in the information disclosure statement [] was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. Applicants set forth below concise explanations of the relevance of each 5. document not in the English language and/or selected documents in the English language.

Respectfully submitted,

Steven William Doane and William McKee Doane

Sandra K. Szczerbieki
Registration No. 53.666

STOEL RIVES LLP 900 SW Fifth Avenue, Suite 2600 Portland, Oregon 97204-1268 Telephone: (503) 224-3380 Facsimile: (503) 220-2480

Attorney Docket No. 51813/2:1 USA

Customer No. 3528

FORM PTO-1449 (REV. 7-80)

### U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

Doane

**FILING DATE** 

**GROUP** 

	OCUMENTS	DOC	ΓΕΝΤ	PA'	U.S.
--	----------	-----	------	-----	------

EXAMINER INITIAL			DOCUMENT NUMBER						DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	AA	4	4	8	3	9	5	0	11/20/84	Fanta et al.	524	48		
	AB	4	1	9	4	9	9	8	3/25/80	Fanta et al.	260	17.4 GC		
	AC	4	1	3	4	8	6	3	1/16/79	Fanta et al.	260	17.4 GC		
	AD	3	9	9	7	4	8	4	12/14/76	Weaver et al.	260	17.4 GC		
	AE	3	9	8	5	6	1	6	10/12/76	Weaver et al.	195	63		
	AF	3	9	8	1	1	0	0	9/21/76	Weaver et al.	47	58		
	AG	3	9	3	5	0	9	9	1/27/76	Weaver et al.	210	43		
	AH	4	0	7	6	6	6	3	2/28/1978	Masuda et al.	260	17.4 GC		

#### FOREIGN PATENT DOCUMENTS

							TRANSL	ATION
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO
	ΑI							

	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)
AJ	"Absorbent Polymers from Starch and Flour Through Graft Polymerization of Acrylonitrile and Comonomer Mixtures," by G. F. Fanta, R. C. Burr, W. M. Doane, and C. R. Russell, Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Starch/Stärke 30 (1978) Nr. 7, S. 237-242.
AK	"Swelling and Rheology of Saponified Starch-g-Polyacrylonitrile Copolymers. Effect of Starch Granule Pretreatment and Grafted Chain Length," by N. W. Taylor, G. F. Fanta, W. M. Doane, and C. R. Russell, Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Applied Polymer Science, Vol. 22, 1343-1357 (1978).
AL	"A Practical Process for the Preparation of Super Slurper, a Starch-Based Polymer with a Large Capacity to Absorb Water," by M. O. Weaver, R. R. Montgomery, L. D. Miller, V. E. Sohns, G. F. Fanta, and W. M. Doane, Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604 (USA); Die Stärke 29, Jahrg. 1977 / Nr. 12, S. 410-413.
AM	"Graft Copolymers of Starch-Polyacrylonitrile Prepared by Ferrous Ion-Hydrogen Peroxide Initiation," by Edward I. Stout, Donald Trimnell, William M. Doane, and Charles R. Russell, Northern Regional Research Center, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Applied Polymer Science, Vol. 21, 2565-2573 (1977).
	"Rheology of a Cellulose Graft Copolymer. Comparison with Other Closely Packed Gel Thickeners," by N. W. Taylor and E. B.

Bagley, Northern Regional Research Laboratory, Agricultural Research Service, Peoria, Illinois 61604; Journal of Applied Polymer AN Science, Vol. 21, 1607-1613 (1977).

"Tailoring Closely Packed Gel-Particle Systems for Use as Thickening Agents," by N. W. Taylor and E. B. Bagley, Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of AO Applied Polymer Science, Vol. 21, 113-122 (1977).

**EXAMINER** 

DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (REV. 7-80)

# U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

Doan

FILING DATE

**GROUP** 

				<b>U.S.</b> 1	PATENT DOCUMENTS						
EXAMINER INITIAL			CUMENT JMBER	DATE	NAME	CLASS	SUBCLASS	FILING IF APPRO			
	AP										
	AQ										
	AR										
	AS										
	AT										
	AU										
	AV										
	AW										
				FOREIC	ON PATENT DOCUMENTS						
EXAMINER		DO	CUMENT					TRANSLATION			
INITIAL	_		UMBER	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO		
	AX										
					ncluding Author, Title, Date, Pertinen						
	AY	Agricult	ural Research	ons of Swollen Gel <i>Service, U. S. Dept</i> 3, 1133-1144 (197	Particles," by N. W. Taylor and E. B artment of Agriculture, Peoria, Illinoi 5).	. Bagley, Northe s 61604; Journa	ern Regional Res I of Polymer Scie	earch Labor ence: Polym	atory, er		
	AZ	"Starch-Polyacrylonitrile Copolymers. Properties of Hydrogels," by E. B. Bagley and N. W. Taylor, Northern Regional Research									
	BA										
	ВВ										
	вс	Researce	h Laboratory, .	ons? A Mechanism Agricultural Resea 18, pp. 2747-2761	n for Certain Thickening Agents," by rch Service, U. S. Department of Agri (1974).	N. W. Taylor an culture, Peoria,	d E. B. Bagley, I Illinois 61604; J	Northern Reg ournal of Ap	gional oplied		
	BD	M. O. W	eaver, E. B. B	agley, G. F. Fanta,	Ims from the Potassium Salt of Hydro and W. M. Doane, Northern Regiona Illinois 61604; Applied Polymer Sym	l Research Labo	oratory, Agricult	raft Copolyn ural Researc	ner," by h Service		

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (REV. 7-80)

### U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

Doane

FILING DATE

**GROUP** 

#### U.S. PATENT DOCUMENTS **FILING DATE** DOCUMENT **EXAMINER** IF APPROPRIATE **SUBCLASS CLASS** NUMBER DATE NAME INITIAL BE BF BG BH ΒI BJ BK BI. FOREIGN PATENT DOCUMENTS **TRANSLATION** DOCUMENT **EXAMINER SUBCLASS COUNTRY CLASS** YES NO NUMBER DATE INITIAL BM OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) "Hydrolyzed Starch-Polyacrylonitrile Graft Copolymer Solutions: Effect of Shear History on Transient and Steady-State Viscoelastic Behavior," by E. B. Bailey and N. W. Taylor; Northern Regional Research Laboratory, Agricultural Research Service, BN U. S. Department of Agriculture, Peoria, Illinois 61604; J. Polymer Sci.: Symposium No. 45, 185-196 (1975). "Kinetics of Grafting Acrylonitrile onto Starch," by L. A. Gugliemelli, C. L. Swanson, and W. M. Doane, Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Polymer BO Science: Polymer Chemistry Edition, Vol. II, 2451-2462 (1973). "Continuous Production of Acrylonitrile-Starch Graft Copolymers by Ceric Ion Catalysis," by Zoila Reyes, Carroll F. Clark, Frederick Dreier, and Russell C. Phillips, Stanford Research Institute, Menlo Park, Calif. 94025; and C. R. Russell and C. E. Rist, BP Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; reprinted from I&EC Process Design & Development, Vol. 12, Page 62, January 1973. "Polyacrylonitrile Distribution in Grafted Starch Granules Determined by Scanning Electron Microscopy," by George F. Fanta, BQ F. L. Baker, Robert C. Burr, W. M. Doane, and C. R. Russell, Peoria, Illinois (USA); Die Stärke 25, Jahrg. 1973 / Nr. 5, S. 157-161. "Starch-Cerium(IV) Complexes in Aqueous Media: Formation, Isolation, and Stability," by L. A. Gugliemelli, W. M. Doane, C. R. Russell, and C. L. Swanson, Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of BR Agriculture, Peoria, Illinois 61604; Polymer Letters, Vol. 10, pp. 415-421 (1972). "Hydrolyzed Starch-Polyacrylonitrile Graft Copolymers: Effect of Structure on Properties," by M. O. Weaver, L. A. Gugliemelli, W. M. Doane, and C. R. Russell, Northern Regional Research Laboratory, Northern Marketing and Nutrition Research Division, BS Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Applied Polymer Science, Vol. 15, pp. 3015-3024 (1971). DATE CONSIDERED **EXAMINER**

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (REV. 7-80)

# U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

DATE CONSIDERED

Doane

FILING DATE

**GROUP** 

								U.S	S. PATENT DOCUMENTS				
EXAMINER INITIAL		]		CUM				DATE	NAME	CLASS	SUBCLASS	FILING IF APPRO	
	вт												
	BU							- "-					
	BV												
	вw												
	вх											<u>,</u>	
	BY												
	BZ		L	1									
	CA				<u> </u>		$\perp$				<u></u>	₹?	
							Т	FORE	IGN PATENT DOCUMENTS	T		<u> </u>	•
EXAMINER INITIAL		DOCUMENT NUMBER						DATE	COUNTRY	CLASS	SUBCLASS	TRANSI YES	ATION NO
	СВ												
				140	0	THE	R DO	CUMENTS	(Including Author, Title, Date, Pertinent P	ages, etc.)			
	СС	M. C	). W	/eav	er. (	C. R.	Russ	ell, and C. E.	Polyacrylonitrile Moiety of Starch-Polyacr Rist, Northern Regional Research Labora nois 61604; Polymer Letters, Vol. 9, pp. 15	tory, Agriculti	ural Research Se	by L. A. Gug ervice, U. S.	gliemelli,
	CD	Russ	"Rheological Method of Investigating Reaction between Cerium(IV) and Starch," by L. A. Gugliemelli, M. O. Weaver and C. R. Russell, Northern Regional Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Polymer Letters, Vol. 9, pp. 711-716 (1971).										C. R.
	CE	"Copolymers of Starch and Polyacrylonitrile. Influence of Granule Swelling on Copolymer Composition under Various Reaction									aboratory lture,		
	CF	"Mo Rus: Divi	difi sell, sion	cation and and and and and and and and and an	on o C. l ricu	f Wh E. Ris Itura 47. N	eat S st, No il Res	tarch by Initiorthern Regionsearch Service, pp. 85-91.	ating Systems Used for Graft Polymerizational Research Laboratory, a laboratory of the U.S. Department of Agriculture, Peoria,	the Northern ( , Illinois 6160	Utilization Resea 4; Reprinted from	arch and Dev m Cereal Cho	elopment emistry,
	CG	"Bas M. ( Dev	se-H O. W elop	lydro Veav omen	olyz er, ( <i>t Di</i>	ed St C. R. visio	Russ n, Ag	-Polyacrylonisell, and C. E.	itrile (S-PAN) Graft Copolymer. S-PAN-1 . Rist, Northern Regional Research Labora search Service, U. S. Department of Agrict 117 (1969).	tory, Northeri	n Utilization Res	earch and	
	СН	"Co	poly	ymer	s of	Mod	lified	Starches wit	th Polyacrylonitrile," by George F. Fanta, R ry, Northern Utilization Research and Dev. ia, Illinois 61604; Journal of Polymer Scier	elopment Divi	sion, Agricultur	al Research I	Service,

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**EXAMINER** 

Sheet 5 of 6

FORM PTO-1449 (REV. 7-80)

### U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

DATE CONSIDERED

Doane

FILING DATE

**GROUP** 

					U.S	. PATENT DOCUMENTS						
EXAMINER INITIAL			OCUM NUMB		DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE			
	CI											
	CJ											
	СК											
	CL											
	СМ											
	CN						·					
	СО											
	ĊР								:_			
		·		L \	FORE	IGN PATENT DOCUMENTS						
EXAMINER		D	OCUM	IENT					TRANSI	LATION		
INITIAL	-		NUME		DATE	COUNTRY	CLASS	SUBCLASS	YES	NO		
	CQ							<u> </u>		<u> </u>		
	<del></del>	1				(Including Author, Title, Date, Pertiner						
	CR	North	ern Reg	ional Res	earch Laborator	uitrile: The Dilution Effect," by George y, Northern Utilization Research and L a, Illinois 61604; Journal of Applied Po	Development Divi	ision, Agricultur	al Research i	C. E. Rist, Service,		
	cs	"Copolymers of Starch and Polyacrylonitrile: The Soluble Fraction," by George F. Fanta, Glen E. Babcock, and Robert C. Burr, Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Servic U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Polymer Science: Part A-1, Vol. 7, pp. 980-982 (1969).										
	СТ	Rober Utiliza	"Copolymers of Wheat Starch and Polyacrylonitrile. Effect of Aqueous – Organic Solvent Systems on Copolymer Composition," to Robert C. Burr, George F. Fanta, C. R. Russell, and C. E. Rist, Northern Regional Research Laboratory, a laboratory of the Norther Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; J. Macromol. Sci. – Chem., A2(1), pp. 93-101 (1968).									
	CU	"Graft Copolymers of Starch. III. Copolymerization of Gelatinized Wheat Starch with Acrylonitrile. Influence of Chain Mod on Copolymer Composition," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, Northern Regional Research Laboratory, Northern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Journal of Applied Polymer Science, Vol. 11, pp. 457-463 (1967).										
	cv	Rober	t.C. Bu	rr, George	F. Fanta, C. R.	of the Starch Granule on the Compositi Russell, and C. E. Rist, <i>Northern Regic</i> re, <i>Peoria, Illinois 61604</i> ; J. Macromol.	nal Research La	boratory, Agrici	ıltural Resea	rch		
	cw	Effect Resea	of Solv	vent on Co	polymer Compo Vorthern Utiliza	ymerization of Gelatinized Wheat Star position," by George F. Fanta, Robert C. tion Research and Development Divisional of Applied Polymer Science, Vol.	Burr, C. R. Russ on, Agricultural I	sell, and C. E. Ri Research Service	st, <i>Northern</i>	Regional		

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**EXAMINER** 

FORM PTO-1449 (REV. 7-80)

## U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 51813/8:1

APPLICATION NO.

INFORMATION DISCLOSURE CITATION (Uses several sheets if necessary)

APPLICANT

Steven William Doane and William McKee

Doane

FILING DATE

**GROUP** 

#### U.S. PATENT DOCUMENTS **FILING DATE** DOCUMENT **EXAMINER** IF APPROPRIATE **CLASS** SUBCLASS NAME NUMBER DATE **INITIAL** CX CY CZ DA DB DC DD DE FOREIGN PATENT DOCUMENTS TRANSLATION DOCUMENT **EXAMINER SUBCLASS** CLASS YES NO **COUNTRY** NUMBER DATE INITIAL DF OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.) "Graft Copolymers of Starch. II. Copolymerization of Gelatinized Wheat Starch with Acrylonitrile: Influence of Reaction Conditions on Copolymer Composition," by George F. Fanta, Robert C. Burr, C. R. Russell, and C. E. Rist, Northern Regional DG Research Laboratory, Agricultural Research Service, U. S. Department of Agriculture, Peoria, Illinois 61604; Polymer Letters, Vol. 4, pp. 765-769 (1966). D. Trimnell et al., Graft Polymerization of Methyl Acrylate onto Granular Starch: Comparison of the Fe<sup>+2</sup>/H<sub>2</sub>O<sub>2</sub> and Ceric Initiating DV Systems, 60 J. Applied Polymer Sci. 285 (1996). George F. Fanta, Starch Graft Copolymers, in 10 Polymeric Materials Encyclopedia 7901 (Joseph C. Salamone ed., 1996). DW George F. Fanta et al., Note, Graft Polymerization of Methyl Acrylate-Vinyl Acetate Mixtures onto Starch, 49 J. Applied Polymer Sci. DX 1679 (1993). George F. Fanta et al., Factors Influencing Absorbent Properties of Saponified Starch-g-Polyacrylonitrile Isolated by Methanol DY Precipitation, 36 Starch/Stärke 416 (1984). George F. Fanta et al., Polysaccharide-g-Polystyrene Copolymers by Persulfate Initiation: Preparation and Properties, 28 J. Applied DZ Polymer Sci. 2455 (1983) George F. Fanta & William M. Doane, Saponified Starch-g-Polyacrylonitrile and Related Absorbents at 26, fig. 1 (Aug. 27, 1981) (unpublished manuscript, on file with Northern Regional Research Center, Agricultural Research Service, U.S. Department of EA Agriculture, Peoria, Illinois 61604). DATE CONSIDERED **EXAMINER**

EXAMINER: Initial if reference considered, whether or not citation is in conformation with MPEP609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.